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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,543	12/20/2001	Hiroshi Nakamoto	1344.1081	2192

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EXAMINER

MOSKOWITZ, NELSON

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/131,688

Applicant(s)

CURTIS ET AL.

Examiner

Nelson Moskowitz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,10-15 and 17-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8, 10-15 and 17-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The request filed on December 11, 2003 for a Continued Examination (RCE) under 37 CFR 1.114 is acceptable and a RCE has been established. Applicants' letter received November 24, 2003 has been received and the amendments have been entered. An action on the merits follows.

2. The text of those sections of title 35 U.S. code not included in this action can be found in a prior Office action.

3 Claims 1, 3-8, 10-15 and 17-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidmann ('306), or Suyama ('213), or Deguchi et al ('721), when taken with Emori et al (OFC '99) or Walker (OSA), and with Emori et al (OECC) or Grubb et al ('922).

In determining obviousness, the following factual determinations are made:

- a. first, the scope and content of the prior art;
- b. second, the difference between the prior art and the pending claims.
- c. third, the level of skill of a person ordinary skill in this art; and
- d. fourth, whether other objective evidence may be present, which indicates

obviousness or nonobviousness. See, e.g., *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ2d 1614, 1616 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 282 US 1, 17-18, USPQ 456, 466-67 (1966)).

Objective evidence includes long felt but unmet need for the claimed invention, failure of others to solve the problem addressed by the claimed invention, and not other factors. See, e.g.,

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Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 Fed. 1573, 1574-76, 22 USPQ 744, 745-47 (Fed. Cir. 1984).

Please note that the specific reference constituents cited herein are for the convenience of Applicant and are in no way intended to be limiting. Each reference should be considered in its entirety.

a) In examining the scope and content of the prior art it is found that Heidmann ('306), Suyama ('213), and Deguchi et al ('721) disclose an optical signal transmission method using fiber optic amplifiers wherein a supervisory signal is imposed on the pumping light supplied to the amplifying medium. See, *inter alia*, Heidmann's figures 1-2, abstract, and columns 1, 2 and 4 where it discloses the placement of a service channel signal on pump light; Suyama's abstract disclosing the use of a pump beam acting as a carrier for the transmission of a supervisory signal; Deguchi et al at col. 6, lines 18-38, discloses carrying supervisory signals on the pump light. Thus, these references show it to be ubiquitous in the prior art to place supervisory signals on the pump radiation for optical fiber amplifiers as they do not require a separate light band for the supervisory signal.

They do not however disclose fiber Raman amplification, but disclose doped optical fiber amplifiers. However, in response to Applicant's arguments it is noted that Applicant admits (specification, page 1, last 4 lines, through page 2, line 5) that there is a known technology to supervise and control WDM optical fiber signal transmission systems with optical amplifiers. Applicant further admits that this technology operates by superimposing a supervisory signal on

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other signals, and a **conventional method** uses pumping light which is modulated by a supervisory signal.

b) Emori et al (OFC '99) and Walker disclose the common alternative use of Raman amplifiers as opposed to doped fiber amplifiers, and the benefits of WDM signal transmission.

c) Emori et al (OECC) and Grubb et al teach the common use of plural pump wavelengths to pump Raman amplifiers operating in WDM modes.

Third, under *Deere* the level of ordinary skill in this art may be determined by the analysis of the Court as set forth in *Environmental Design Ltd. v. Union Oil Co.* 713 F.3d 693, 218 USPQ 865-69 (Fed. Cir. 1983) cert. denied, 464 U.S. (1984), where the court listed these factors relevant to the determination of the level of ordinary skill: type of problems encountered in the art, prior art solutions, rapidity of innovations, sophistication of technology, and educational level of the active worker in the field.

The types of problems encountered in the art involve wavelength multiplexing systems with Raman and/or DFA systems, the need for supervisory signals to control the complex systems, and how to provide inexpensive, accurate and reliable signals.

Innovation in this field has been very fast as can be seen from virtual birth of this field in the 1950s to its present highly complex and sophisticated status.

Prior art solutions include superimposing supervisory signals on pumping light, and pumping Raman amplifiers and doped fiber amplifiers with plural pump wavelengths.

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Skilled artisans generally have a graduate level education and over three (3) years of experience, as can be seen from published articles in the major journals in this field.

To date, no secondary consideration (objective evidence) has been presented.

Therefore, the use of plural bands of pump radiation for Raman amplifiers, WDM for signalling on the fiber amplifier system, and the superimposing of supervisory signals on a pump wavelength, would have obvious to one skilled in the art for the aforesaid reasons.

A further indication of the obvious matter nature of the aforesaid combination is the expectancy of the beneficial results from using supervisory signals superimposed on Raman pump wavelengths as claimed. This follows just as unexpected beneficial results would be evidence of unobviousness.

As the aforesaid prior art is known by optical physicists to provide the respective benefits and improvement as set forth above, the physicist would have been led to make the obvious combination of these teachings in order to obtain the benefits this prior art taught and artisans would typically readily recognize.

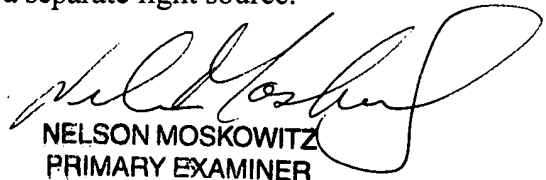
It is noted that an artisan would generally look to optimize optical amplifiers which would otherwise require greater bandwidth and complexity. Such optimization ordinarily leads to improved lower cost, and improved accuracy.

Regarding Applicants' remaining arguments, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the

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time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. The Federal Circuit reasons in Par-Ordnance Mfg. v. SGS Importers Int'l Inc., 73 F.3d 1085, 1088-89, 37 USPQ2d 1237, 1239-40 (Fed. Cir. 1995), that for the determination of obviousness, the court must answer whether one of ordinary skill in the art who sets out to solve the problem and who had before him in his workshop the prior art, would have reasonably expected to use the solution that is claimed by Applicant. The answer in the present case is yes.

In regard to Applicant's it is noted that Heidmann ('306), Suyama ('213), and Deguchi et al ('721) disclose an optical signal transmission method using fiber optic amplifiers wherein a supervisory signal is imposed on the pumping light supplied to the amplifying medium. See, inter alia, Heidmann's figures 1-2, abstract, and columns 1, 2 and 4 where it discloses the placement of a service channel signal on pump light; Suyama's abstract disclosing the use of a pump beam acting as a carrier for the transmission of a supervisory signal; Deguchi et al at col. 6, lines 18-38, discloses carrying supervisory signals on the pump light. Thus, these references show it to be ubiquitous in the prior art to place supervisory signals on the pump radiation for optical fiber amplifiers as they do not require a separate light band for the supervisory signal. Furthermore, contrary to Applicant's arguments, the aforesaid references disclose placing a supervisory signal on pumping light as does not require a separate light source.



NELSON MOSKOWITZ
PRIMARY EXAMINER